

REMARKS

Claims 1, 3, 5-11, 13, and 15-19 are pending in the application.

Claims 1 and 10 have been amended in order to more particularly point out, and distinctly claim the subject matter to which the Applicants regard as their invention. It is believed that this Amendment is fully responsive to the Office Action dated **February 4, 2003**.

Claim Rejections under 35 USC §102

Claims 1, 5-7 and 9 are rejected under 35 USC §102(e) as being anticipated by Hata.

The detailed explanations provided in the outstanding Office action is fully appreciated. Independent claim 1 has been amended to incorporate the subject matter of claims 2 and 4 therein.

It is well settled that:

A claim is anticipated only if each and every element *as set forth in the claim* is found, either expressly or inherently described, in a single prior art reference." *Constant v. Advanced Micro-Devices, Inc.*, 848 F.2d 1567, 7 USPQ2d 1057 (Fed. Cir. 1988)."

By so amending, it is believed that the claimed invention is placed in condition for allowance. Should the Office continue to believe that independent claim 1, as amended, is anticipated by the asserted prior art, a citation of where each and every claimed feature, either as column number and line number, or figure number and reference numeral, or a combination thereof, as disclosed in the asserted prior art is respectfully requested. Should the Office determine that any claimed feature is not disclosed in the asserted prior art, it is respectfully submitted that the claimed invention is not anticipated by the asserted prior art. Allowance of the claimed invention is then respectfully requested.

Claim Rejections under 35 USC §103

Claim 2 is rejected under 35 USC §103(a) as being unpatentable over Hata in view of Okazaki et al. (U.S. Patent No. 5,966,396).

Claim 2 is concurrently canceled without prejudice or disclaimer to the subject matter therein, rendering any rejection applied thereto moot. Reconsideration and withdrawal of this rejection are respectfully requested.

Claim 3 is rejected under 35 USC §103(a) as being unpatentable over Hata in view of Johnston, Jr. et al. (U.S. Patent No. 4,888,624).

As mentioned hereinabove, independent claim 1 has been amended to incorporate therein the subject matter of claims 2 and 4. By so amending, it is believed that independent claim 1 is placed in condition for allowance. All claims dependent thereon, by virtue of inherency, are also placed in condition for allowance.

Claim 4 is rejected under 35 USC §103(a) as being unpatentable over Hata in view of Adachi et al.

In the final Office Action, in the reasons for rejecting claims 4 and 14, the Office Action indicates that it would have been obvious to those skilled in the art to modify the invention of Hata in view of the teaching of Adachi et al.

In the semiconductor device of Hata, however, both an N-type $\text{Al}_{0.05}\text{Ga}_{0.95}\text{N}$ layer 6 and an N-type $\text{Al}_{0.15}\text{Ga}_{0.85}\text{N}$ layer 7 are formed on a flat portion and sidewalls of a ridge portion of a P-type cladding layer 5, both of these layers serving as current blocking layers.

In the semiconductor device of Adachi et al., both an N-type $\text{Al}_{0.5}\text{Ga}_{0.5}\text{As}$ layer 7 and an N-type GaAs layer 8 are formed on a flat portion and sidewalls of a ridge portion of a P-type cladding layer 5, both of these layers serving as current blocking layers.

In comparison between the semiconductor device of Hata and that of Adachi et al., it is apparent from the relationship in position of the respective layers that the $\text{Al}_{0.05}\text{Ga}_{0.95}\text{N}$ layer 6 and the N-type $\text{Al}_{0.15}\text{Ga}_{0.85}\text{N}$ layer 7 of Hata correspond to the N-type $\text{Al}_{0.5}\text{Ga}_{0.5}\text{As}$ layer 7 and the N-type GaAs layer 8 of Adachi et al., respectively.

The Office Action notes that the N-type $\text{Al}_{0.15}\text{Ga}_{0.85}\text{N}$ layer 7 of Hata corresponds to the first current blocking layer of the present invention; however, this layer 7 corresponds to the N-type GaAs layer 8 of Adachi et al. as described above, and Adachi et al. fails to recite that a current blocking layer is further formed on the N-type GaAs layer 8.

It is therefore impossible to infer that an N-type (second conductivity type) current blocking layer be formed on the N-type $\text{Al}_{0.15}\text{Ga}_{0.85}\text{N}$ layer 7 of Hata in view of the teaching of Adachi et al.

Moreover, the $\text{Al}_{0.5}\text{Ga}_{0.5}\text{As}$ layer 7 of Adachi et al. is not a high resistive layer containing at least one zinc, beryllium, calcium and carbon. Adachi et al. does not recite at all that a second current blocking layer is formed on a first current blocking layer of high resistance containing at least one of zinc, beryllium, calcium and carbon.

For the above reasons, the Applicant does not believe that the present invention would have been obvious over the cited references.

Claim 4 is concurrently canceled without prejudice or disclaimer to the subject matter therein, rendering any rejection applied thereto moot. Reconsideration and withdrawal of this rejection are respectfully requested.

Claim 8 is rejected under 35 USC §103(a) as being unpatentable over Hata in view

Hiroyama et al.

As mentioned hereinabove, independent claim 1 has been amended to incorporate therein the subject matter of claims 2 and 4. By so amending, it is believed that independent claim 1 is placed in condition for allowance. All claims dependent thereon, by virtue of inherency, are also placed in condition for allowance.

Reconsideration and withdrawal of this rejection are respectfully requested.

Claims 10, 11, 15-17 and 19 are rejected under 35 USC §103(a) as being unpatentable over Hata in view in view of Hirata.

The detailed explanations provided in the outstanding Office action is fully appreciated. Independent claim 10 has been amended to incorporate the subject matter of claims 11, 12 and 14 therein. It is well settled that:

“A claim is anticipated only if each and every element *as set forth in the claim* is found, either expressly or inherently described, in a single prior art reference.” *Constant v. Advanced Micro-Devices, Inc.*, 848 F.2d 1567, 7 USPQ2d 1057 (Fed. Cir. 1988).”

By so amending, it is believed that the claimed invention is placed in condition for allowance. Should the Office continue to believe that independent claim 10, as amended, is anticipated by the asserted prior art, a citation of where each and every claimed feature, either as column number and line number, or figure number and reference numeral, or a combination thereof, as disclosed in the asserted prior art is respectfully requested. Should the Office determine that any claimed feature is

not disclosed in the asserted prior art, it is respectfully submitted that the claimed invention is not anticipated by the asserted prior art. Allowance of the claimed invention is then respectfully requested.

Claim 12 is rejected under 35 USC §103(a) as being unpatentable over Hata in view of Hirata as applied to claim 10 above, and further in view of Okazaki.

Claim 12 is concurrently canceled without prejudice or disclaimer to the subject matter therein, rendering any rejection applied thereto moot. Reconsideration and withdrawal of this rejection are respectfully requested.

Claim 13 is rejected under 35 USC §103(a) as being unpatentable over Hata in view of Hirata as applied to claim 10 above, and further in view of Johnston.

As mentioned hereinabove, independent claim 10 has been amended to incorporate therein the subject matter of claims 12 and 14. By so amending, it is believed that independent claim 10 is placed in condition for allowance. All claims dependent thereon, by virtue of inherency, are also placed in condition for allowance.

Claim 14 is rejected under 35 USC §103(a) as being unpatentable over Hata in view of Hirata as applied to claim 10 above, and further in view of Adachi et al.

In the final Office Action, in the reasons for rejecting claims 4 and 14, the Office Action indicates that it would have been obvious to those skilled in the art to modify the invention of Hata in view of the teaching of Adachi et al.

In the semiconductor device of Hata, however, both an N-type $\text{Al}_{0.05}\text{Ga}_{0.95}\text{N}$ layer 6 and an N-type $\text{Al}_{0.15}\text{Ga}_{0.85}\text{N}$ layer 7 are formed on a flat portion and sidewalls of a ridge portion of a P-type cladding layer 5, both of these layers serving as current blocking layers.

In the semiconductor device of Adachi et al., both an N-type $\text{Al}_{0.5}\text{Ga}_{0.5}\text{As}$ layer 7 and an N-type GaAs layer 8 are formed on a flat portion and sidewalls of a ridge portion of a P-type cladding layer 5, both of these layers serving as current blocking layers.

In comparison between the semiconductor device of Hata and that of Adachi et al., it is apparent from the relationship in position of the respective layers that the $\text{Al}_{0.05}\text{Ga}_{0.95}\text{N}$ layer 6 and the N-type $\text{Al}_{0.15}\text{Ga}_{0.85}\text{N}$ layer 7 of Hata correspond to the N-type $\text{Al}_{0.5}\text{Ga}_{0.5}\text{As}$ layer 7 and the N-type GaAs layer 8 of Adachi et al., respectively.

The Office Action notes that the N-type $\text{Al}_{0.15}\text{Ga}_{0.85}\text{N}$ layer 7 of Hata corresponds to the first current blocking layer of the present invention; however, this layer 7 corresponds to the N-type GaAs layer 8 of Adachi et al. as described above, and Adachi et al. fails to recite that a current blocking layer is further formed on the N-type GaAs layer 8.

It is therefore impossible to infer that an N-type (second conductivity type) current blocking layer be formed on the N-type $\text{Al}_{0.15}\text{Ga}_{0.85}\text{N}$ layer 7 of Hata in view of the teaching of Adachi et al.

Moreover, the $\text{Al}_{0.5}\text{Ga}_{0.5}\text{As}$ layer 7 of Adachi et al. is not a high resistive layer containing at least one zinc, beryllium, calcium and carbon. Adachi et al. does not recite at all that a second current blocking layer is formed on a first current blocking layer of high resistance containing at least one of zinc, beryllium, calcium and carbon.

For the above reasons, the Applicant does not believe that the present invention would have been obvious over the cited references.

Claim 14 is concurrently canceled without prejudice or disclaimer to the subject matter therein, rendering any rejection applied thereto moot. Reconsideration and withdrawal of this rejection are respectfully requested.

Claim 18 is rejected under 35 USC §103(a) as being unpatentable over Hata in view of Hirata as applied to claim 17 above, and further in view of Hiroyama et al.

As mentioned hereinabove, independent claim 10 has been amended to incorporate therein the subject matter of claims 11, 12 and 14. By so amending, it is believed that independent claim 10 is placed in condition for allowance. All claims dependent thereon, by virtue of inherency, are also placed in condition for allowance.

Prematured Final Office Action:

It should be noted that even though Hata (U.S. Patent No. 6,215,200) has been cited as a prior art pertinent to the Applicant's disclosure. However, it is also communicated by the Office that this prior art reference was not relied upon, which is quite true in that no anticipation or obviousness rejection was ever formulated based on this prior art reference. In the outstanding Office action, by formulating a new ground of anticipation rejection for the very first time; yet, also making this Office action final, the Office is essentially formulating a new ground of rejection without allowing the Applicant an opportunity to respond to this rejection. This is a clear violation of procedural fairness. Therefore, withdrawal of the final Office action is respectfully requested.

Conclusion

In view of the aforementioned amendments and accompanying remarks, all pending claims, as amended, are in condition for allowance, which action, at an early date, is requested.

If, for any reason, it is felt that this application is not now in condition for allowance, the Examiner is requested to contact Applicants undersigned attorney at the telephone number indicated below to arrange for an interview to expedite the disposition of this case.

Attached hereto is a marked-up version of the changes made to the claims by the current amendment.

The attached page is captioned "**Version with markings to show changes made.**"

In the event that this paper is not timely filed, Applicants respectfully petition for an appropriate extension of time. Please charge any fees for such an extension of time and any other fees which may be due with respect to this paper, to Deposit Account No. 01-2340.

Respectfully submitted,
ARMSTRONG, WESTERMAN & HATTORI, LLP



Michael N. Lau
Attorney for Applicant
Reg. No. 39,479

MNL/alw

Atty. Docket No. **001221**
Suite 1000, 1725 K Street, N.W.

Washington, D.C. 20006
(202) 659-2930



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